

ing nearly to apex of flagellum; third joint a little longer than second, with its branch originating about at its middle and attaining to about the same point as the others; all the funicular rami sparsely clothed with long fine hairs; fourth joint of funicle nearly four times as long as broad, thicker toward apex than at base, and without a branch; club 2-jointed, a little thicker and very slightly longer than fourth funicular joint, its apical joint about half as long as the basal one and terminating in a very short spine; abdomen elliptical, about as long as thorax and about twice as long as broad, with its dorsum mostly dark cupreus. Otherwise like the female except less robust.

Type locality.—Mount Vernon, Wash.

Type.—U.S.N.M. no. 54704.

Described from 20 females (1 holotype) and 21 males (1 allotype) reared from *Ceutorhynchus assimilis* (Payk.) in turnip seed pods July 3, 1937, by A. J. Hanson. A male and a female reared July 17–19, 1937, by H. L. Parker, under European Parasite Laboratory no. 4377 from "Cruciferae pods" from Holland, seem to be this same species but are not considered a part of the type series. Also in the collection are 8 specimens, believed to be this species, from Oakley, Hollister, Roseworth, and Castleford, Idaho, all swept from or collected on *Sophia sophia* and *Sisymbrium altissimum* in June 1937 and in May and June 1931. The specimens collected in 1931 were taken by David E. Fox, but the collector of the earlier specimens is not known.

ENTOMOLOGY.—*Revision of the Nearctic Megophthalminae (Homoptera: Cicadellidae)*.¹ P. W. OMAN, U. S. Bureau of Entomology and Plant Quarantine.

This paper deals with the North American leafhoppers heretofore assigned to the genus *Paropulopa* Fieber. According to the present interpretation none of the seven known species, representing two genera herein described, is congeneric with the European *Paropulopa lineata* Fieber, 1866, genotype of *Paropulopa*.

Paropulopa lineata Fieber has no ocelli, the ocellar vestiges being on the crown rather than on the face, whereas in all the North American species of Megophthalminae the ocelli are present and located on the face. This character is sufficient to distinguish the North American forms from *Paropulopa*, and they may be differentiated from *Megophthalmus* Curtis,² to which they seem more closely related, by the fact that the carinae replacing the frontal and epicranial sutures are not foliaceously produced. Because these leafhoppers are rather rare in collections and the characters of the subfamily are not well known, the following résumé of the characters common to the North American representatives seems appropriate.

Relatively small, robust leafhoppers (2.5–5 mm in length); color some shade of cinereous, brown, or fuscous; head, including eyes,

¹ Received February 26, 1941.

² *Megophthalmus* Curtis, January 1833, genotype (*Megophthalmus bipunctatus* Curtis, 1833) = *Cicada scanica* Fallen, 1806; synonym *Paropia* Germar, March 1833, genotype (*Cicada*) *Ulopa scanica* (Fallen), 1806 (= *Coelidia* ? *scutata* Germar, 1821).

distinctly wider than pronotum; eyes somewhat bulbous; clypeal suture distinct; frontal sutures replaced by carinae above antennal pits; clypellus elongate and narrowed slightly both basally and distally, extending well beyond the normal curve of the genae; gena strongly emarginate below eye; length of antenna about one-half width of head; antennal pit shallow, with only a very small ledge above; distance between ocelli equal to or greater than distance from ocellus to eye; ocellus located at the inner end of a more or less distinct transverse depression formed by the frontal carina and the dorsal margin of the face, the ocellus thus directed laterad or laterocephalad; head, pronotum, scutellum, and at least basal portion of forewing, excepting the veins, with numerous small, circular pits; forewing subcoriaceous, veins usually rather prominent, appendix absent.

In distribution the species treated in this paper appear limited to California and adjacent Mexico west of the Sierras, and locality records given for the various species are in California unless otherwise indicated.

The illustrations accompanying this paper were made on coordinate paper with the aid of a micrometer scale placed in the ocular of a compound microscope. Corresponding parts are drawn to the same scale and therefore give an accurate idea of the relative size of the various structures in the different species. For convenience in examining these figures corresponding structures are indicated by the same letter, as follows: A, lateral view of dorsal spine; B, dorsal view of style and connective; C, lateral view of aedeagus; D, ventral view of male plates, from dissected specimens; E, dorsal view of head, pronotum, and scutellum; F, ventral view of female sternite VI; G, ventral view of female sternite VII. These letters are in each instance associated with a number indicating the species, as follows: 1, *Brenda arborea* (Ball); 2, *Tiaja mexicana* (Ball); 3, *T. interrupta* (Ball); 4, *T. californica* (Ball); 5, *T. ventura*, n. sp.; 6, *T. friscana* (Ball); 7, *T. montara*, n. sp.

In choosing the cotype specimens herein designated as lectotypes of the various species, I have in each case selected the specimen to which Ball had attached his name label.

KEY TO GENERA AND SPECIES OF NEARCTIC MEGOPHTHALMINAE

- a*¹. Hindwings fully developed. Crown broad and short, median length not greater than length next to eye (Fig. 1E)..... *Brenda*, n. gen.
One species, *Brenda arborea* (Ball)
- a*². Hindwings rudimentary. Crown distinctly longer medially than next to eye (Fig. 4E)..... *Tiaja*, n. gen.
- b*¹. Vein Cu₂ not forming a claval suture but evident as a vein throughout its length. Veins adjacent to Cu₂ (Cu₁ and first claval) at no point elevated above level of Cu₂..... *T. mexicana* (Ball)

- b*². Vein Cu₂ either obscure or appearing as the claval suture for at least part of its length. Veins adjacent to Cu₂ (Cu₁ and first claval) usually distinctly elevated above level of Cu₂ opposite the furcation of radius and media.
- c*¹. Sternite VII of female usually visible only laterally, always shorter medially than laterally and median length always less than median length of sternite VI. Male plates rather small, appearing (unless relaxed and dissected) subtruncate distally. Dorsal spine slender, distal portion attenuated. *T. interrupta* (Ball)
- c*². Sternite VII of female visible throughout its width, not shorter medially than laterally, or if so due to a broad, shallow, median emargination posteriorly and then with median length equal to or greater than median length of sternite VI. Male plates large, never appearing subtruncate, but with caudolateral margins deflexed. Dorsal spine stout, distal portion not attenuated.
- d*¹. Sternite VII of female with a median **U**-shaped emargination posteriorly (Fig. 4G). Dorsal spine with four hooklike points distally (Fig. 4A) *T. californica* (Ball)
- d*². Sternite VII of female without a median **U**-shaped emargination posteriorly. Dorsal spine with not more than three points distally.
- e*¹. Females.
- f*¹. Sternite VII truncate or nearly so. Basal margins of pygofer exposed.
- g*¹. Basal margins of pygofer not deflexed . . . *T. ventura*, n. sp.
- g*². Basal margins of pygofer strongly deflexed. *T. friscana* (Ball)
- f*². Sternite VII with a broad, shallow, median emargination posteriorly. Basal margins of pygofer covered by sternite VII. *T. montara*, n. sp.
- e*². Males.
- h*¹. Style not extending beyond apex of plate. *T. ventura*, n. sp.
- h*². Style extending well beyond apex of plate.
- i*¹. Style with distal portion attenuated (Fig. 6B) *T. friscana* (Ball)
- i*². Style with distal portion expanded (Fig. 7B) *T. montara*, n. sp.

Brenda, n. gen.

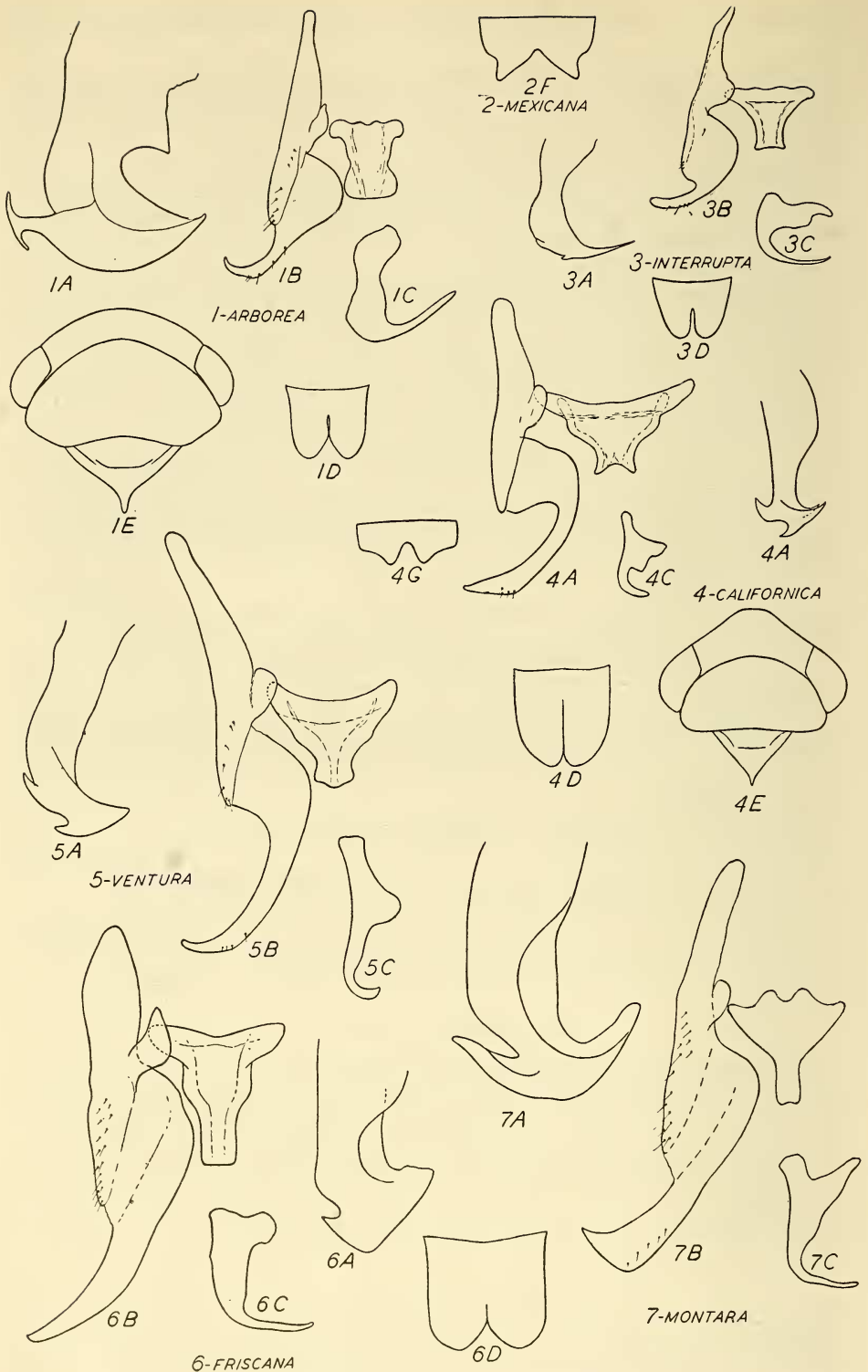
Face broad and relatively flat; ocellar depressions very shallow; crown short and broad (Fig. 1E), with nearly parallel margins, median one-third with a very shallow transverse depression. Pronotum broadly arched except for a pair of broad, shallow depressions anterolaterally; lateral margins short. Venation of forewing normal, with three discal and three anteapical cells. Hindwing fully developed, with four apical cells; costal area very broad at apex of wing.

Type of the genus, *Paropulopa arborea* Ball, 1909.

Brenda arborea (Ball), n. comb.

Paropulopa arborea Ball, Can. Ent. 41: 184. 1909.

Length 3.4–3.9 mm. Anterior margin of head sharply angled. Circular pits on forewing sparse, occurring only on basal half along veins.



Figs. 1-7.—(See opposite page for explanation.)

Color variable, usually some shade of brown and typically golden-brown, but frequently with considerable cinereous. Fuscous marks, if present, always more extensive on the venter; on the dorsum usually confined to the circular pits but occasionally forming a faint and poorly outlined band across middle of forewing.

Sternite VII of female very short, usually less than one-third the length of sternite VI and frequently not apparent as a separate sternite, posterior margin truncate. Basal portions of ovipositor, ovipositor sheath, and pygofer exposed. Male valve small, nearly quadrangular in outline. Male plates small, rounded distally (Fig. 1D). Dorsal spine heavily sclerotized and pigmented, usually visible without dissection, in lateral view as illustrated (Fig. 1A). Style, connective, and aedeagus relatively simple, outlines as illustrated (Figs. 1B, 1C).

Distribution.—Cold Springs, Sequoia National Forest (Oman); Colfax (Ball); El Portal (Oman); Palo Alto (Oman); Sloughouse (Cartwright); Towle (Beamer); Watsonville (Ball); Yosemite Valley (Beamer). All these localities are in central California west of the Sierras. April 29 to August 20. 62 specimens examined.

Lectotype female labeled "Colfax, Cal. 23 Je. 08" in the E. D. Ball collection, U. S. National Museum.

Tiaja, n. gen.

Face moderately convex below the level of the antennal pits, above this line with a distinct median depression between the two rather deep ocellar depressions; crown distinctly longer medially than next to eye (Fig. 4E), nearly flat or with a shallow depressed area on disk. Pronotum scarcely arched, slightly elevated along the median line, thus accentuating somewhat the broad, shallow, antero-lateral depressions; lateral margins short; posterior margin truncate or slightly emarginate medially. Venation of forewing frequently irregular and usually with additional cross veins in the apical portion. Hindwings rudimentary.

Type of the genus, *Paropulopa californica* Ball, 1909.

Tiaja mexicana (Ball), n. comb.

Paropulopa mexicana Ball, Can. Ent. 34: 22. 1902.

Length 3.6 mm. Clypeus comparatively tumid; frontal carinae not so prominent as is usual in the genus; anterior margin of head rather blunt. Forewing long and rather narrow, distally narrowing about equally from both margins; apex bluntly pointed; Cu_2 evident as a distinct vein, not as the claval suture; circular pits distributed rather evenly over entire forewing.

Color testaceous-brown, irregularly marked with fuscous on head and pronotum. Media of forewing marked with brown on distal half.

Sternite VII of female evident only as a broad, somewhat membranous flap medially, almost completely covered by the large sternite VI, the posterior margin of which is produced into a pair of bluntly pointed, divergent, triangular projections laterally, thus forming a broad, flaring V-shaped median emargination (Fig. 2F). Male unknown.

Distribution.—Sierra Madre Mountains, Chihuahua, Mexico, altitude about 7,200 feet. Date unknown. Known only from two female cotypes.

Lectotype female labeled "Sr. Madre Mts. Mex." in the E. D. Ball collection, U. S. National Museum.

Figs. 1-7.—Leafhoppers of the subfamily Megophthalminae: 1, *Brenda arborea* (Ball); 2-7 species of *Tiaja*. For identification of various detailed drawings see explanation in introductory remarks.

Tiaja interrupta (Ball), n. comb.

Paropulopa interrupta Ball, Can. Ent. 34: 21. 1902.

Length 2.5–3 mm. Anterior margin of head somewhat variable but usually rather sharp, always more distinctly angled than in *mexicana*. Forewing with costal margin more strongly curved than commissural margin; apex bluntly pointed; claval suture (Cu_2) rather obscure basally; Cu_1 and 1st claval slightly elevated above Cu_2 opposite furcation of radius and media; circular pits rather sparse and arranged mostly in single rows along veins.

Color very variable, showing almost every possible intergradation from uniform pale testaceous-brown or cinereous with a few fuscous marks to fuscous with a few cinereous marks, typically about equally fuscous and cinereous with an irregularly mottled appearance.

Sternite VII of female very short, usually visible for its entire length but occasionally visible only laterally. Male valve small, truncate posteriorly, a little wider basally than distally. Male plates small appearing (unless relaxed and dissected) subtruncate distally and with lateral margins nearly straight, in dissected specimens outline as illustrated (Fig. 3D). Dorsal spine with distal portion attenuated and with a pair of small, blunt, hook-like projections on the ventral surface, in lateral view as illustrated (Fig. 3A). Style, connective, and aedeagus simple, outlines as illustrated (Figs. 3B, 3C).

Distribution.—Beaumont (Ball); Cabazon (Ball); Carlsbad (Beamer); Cuyamaca Lake (Beamer); Del Mar (Oman); Hurkey Creek, San Jacinto Mts. (Oman); Jacumba (Oman); La Mesa (Ball); Los Angeles Co. (Coquillett, Koebele); Miramar (Beamer); Newton (Oman); Ontario (Ball); Pasadena (Ball, Fall); San Diego (Ball, Beamer); Tia Juana (Ball). MEXICO: Tia Juana (Ball). Apparently confined to rather low altitudes in southern California and adjacent Mexico west of the Imperial Valley. June 1 to August 6; 135 specimens examined.

Lectotype female labeled "Los Angeles Co., Cal., Collection Coquillett" in the U. S. National Museum, no. 6096.

Tiaja californica (Ball), n. comb.

Paropulopa californica Ball, Can. Ent. 41: 184. 1909.

Length 2.8–3.2 mm. Head, pronotum, and scutellum as illustrated (Fig. 4E). Anterior margin of head distinctly angled. Forewing usually with costal margin distally more strongly curved than commissural margin, sometimes the two margins about equally curved; apex bluntly pointed; Cu_2 and circular pits as in *interrupta*.

Color varying from uniform pale testaceous-brown or uniform cinereous with a few brown marks to brownish fuscous with numerous cinereous marks, typically the ground color of pale testaceous-brown and cinereous with irregular markings of fuscous and brown.

Sternite VII of female short laterally, posterior margin with a bluntly rounded projection each side of a flaring U-shaped median emargination (Fig. 4G). Male valve short, truncate posteriorly and distinctly broader basally than distally. Male plates rather large, appearing (unless relaxed and dissected) nearly parallel sided, distally rounded and but little incised on median line, caudo-lateral margins slightly deflexed, in dissected specimens the outline as illustrated (Fig. 4D). Dorsal spine ending in four hook-like points, two rather long and directed caudad, two short and directed cephalad (Fig. 4A). Style, connective, and aedeagus as illustrated in outline (Figs. 4B, 4C), the aedeagus unusually small in comparison with the aedeagi of other members of the genus.

Distribution.—Burlingame (Oman); Honda (Oman); Leona Heights (Beamer); Montara (Oman); Monterey (Beamer); Niles (Beamer); Salinas (Ball); Sargent (Beamer). These localities are all in the low hills south and east of San Francisco Bay. April 26 to July 22; 182 specimens examined.

Lectotype female labeled "Salinas, Cal., 20 Je. '08, E. D. Ball Collector" in the E. D. Ball collection, U. S. National Museum.

***Tiaja ventura*, n. sp.**

Length 3.2–4 mm. Frontal carinae prominent; anterior margin of head sharply angled, occasionally subfoliaceous. Forewing with costal margin distally more strongly curved than commissural margin; apex bluntly pointed; Cu_1 and 1st claval distinctly elevated above claval suture opposite furcation of radius and media; circular pits obscure but present along veins.

Color cinereous, sometimes tinged with testaceous-brown, and usually irregularly marked with brown or fuscous.

Sternite VII of female short, posterior margin truncate or nearly so. Exposed basal margins of female pygofer slightly thickened but not deflexed. Male plates as in *californica* but proportionately a little broader. Dorsal spine with one rather blunt point and two hook-like projections distally, in lateral view as illustrated (Fig. 5A). Style, connective, and aedeagus as illustrated in outline (Figs. 5B, 5C).

Distribution.—Gaviota (Beamer); Oxnard (Ball); Pismo Beach (Beamer); Santa Barbara (Ball). All these localities are along the coast north of Los Angeles. April 25 to July 25; 198 specimens examined.

Holotype male, allotype female, and numerous paratypes of both sexes from Pismo Beach, Calif., July 19, 1933, R. H. Beamer. Holotype, allotype, and paratypes in collection of University of Kansas, paratypes in collection of U. S. National Museum, no. 55132.

For this species I have adopted the manuscript name applied to it by Dr. E. D. Ball, who recognized it as new.

***Tiaja friscana* (Ball), n. comb.**

Paropulopa friscana Ball, Can. Ent. 41: 183. 1909.

Length 4–5 mm. Anterior margin of head sharply angled but not so thin as in *ventura*; crown proportionately much shorter than in Fig. 4E (*californica*) but always distinctly longer medially than next to eye. Forewing with costal and commissural margins about equally curved distally; apex blunt, scarcely pointed; claval suture (Cu_2) obscure basally; Cu_1 and 1st claval usually distinctly elevated above level of Cu_2 opposite furcation of radius and media; circular pits not restricted to rows along veins.

Color pale testaceous-brown or cinereous with irregular brown or fuscous marks. Apparently not so variable in color as *interrupta* and *californica*.

Sternite VII of female short, posterior margin truncate and usually slightly deflexed, at least medially. Exposed basal margins of female pygofer strongly deflexed. Male valve broad and very short, basal margin but little longer than distal margin. Male plates broad, apices broadly rounded and separated by a flaring v-shaped median incision distally (Fig. 6D), the caudolateral margins strongly deflexed. Dorsal spine heavily sclerotized and pigmented, visible without dissection, in lateral view as illustrated (Fig. 6A). Style long, distal portion attenuated, heavily sclerotized and pigmented and extending well beyond plate, outline of style and connective as illustrated (Fig. 6B). Aedeagus as illustrated in outline (Fig. 6C).

Distribution.—Known only from the San Francisco Bay region (Ball,

Beamer, Bridwell, Oman, Van Duzee). March 30 to September 9; 34 specimens examined.

Lectotype female labeled "S. Francisco, Cal., 27 Ap. 08, E. D. Ball Collector" in the E. D. Ball collection, U. S. National Museum.

Tiaja montara, n. sp.

Length 3.8–4.1 mm. Anterior margin of head sharply angled; crown proportionately much shorter than in Fig. 4E (*californica*) but always distinctly longer medially than next to eye. Forewing as in *friscana*.

Color pale testaceous-brown or cinereous with a few irregular brown or fuscous marks. Veins of distal two-thirds of corium of forewing marked with fuscous in some specimens. The small series at hand is rather uniform in color but considerable variation may be expected.

Sternite VII of female as long or longer than sternite VI, posterior margin broadly and shallowly emarginated. Basal margins of female pygofer covered by sternite VII. Male valve and plates as in *friscana*. Dorsal spine heavily sclerotized, distally with a pair of hook-like projections of about equal size, one directed caudad and one cephalad, in lateral view as illustrated (Fig. 7A). Style extending well beyond plate, the apex broad and subtruncate, the subtruncated margin slightly deflexed, outline of style and connective as illustrated (Fig. 7B). Aedeagus as illustrated in outline (Fig. 7C).

Holotype male, allotype female, and three female paratypes from Montara, Calif., June 13, 1935, P. W. Oman. Known only from the type material. Types in collection of U. S. National Museum, no. 55132.

PROCEEDINGS OF THE ACADEMY
AND AFFILIATED SOCIETIES

THE ACADEMY

367TH MEETING OF THE BOARD OF MANAGERS

The 367th meeting of the Board of Managers was held in the Library of the Cosmos Club on Friday, March 14, 1941. President CLARK called the meeting to order at 8:08 P.M., with 21 persons present, as follows: A. H. CLARK, F. D. ROSSINI, H. S. RAPPLEYE, N. R. SMITH, W. W. DIEHL, J. H. KEMPTON, J. H. HIBBEN, J. E. GRAF, F. H. H. ROBERTS, JR., F. G. BRICKWEDDE, E. P. WALKER, R. M. HANN, W. A. DAYTON, H. L. CURTIS, W. RAMBERG, J. R. CHRISTIE, L. W. PARR, C. L. GARNER, and, by invitation, R. J. SEEGER, G. A. COOPER, and F. C. KRACEK.

The minutes of the 366th meeting were read and approved.

President CLARK announced the following appointments:

(a) Committee to Consider the Publication of a Directory of the Academy for 1941: A. H. CLARK (chairman), H. L. CURTIS, J. E. GRAF, H. S. RAPPLEYE, F. D. ROSSINI, and N. R. SMITH.

(b) Committee to Survey the Academy's Investments and Deposits: H. S. RAPPLEYE (chairman), A. T. MCPHERSON.

(c) Committee on Awards for Scientific Achievement for 1941: General chairman, J. M. COOPER; For the Biological Sciences, J. M. COOPER (chairman), F. O. COE, H. A. EDSON, E. A. GOLDMAN, I. T. HAIG, C. F. W. MUESEBECK, H. W. SCHOENING, G. STEINER, and A. WETMORE; for the Engineering Sciences, H. G. DORSEY (chairman), C. H. BIRDSEYE, F. M. DEFENDORF, J. H. DELLINGER, A. C. FIELDNER, P. A. SMITH, and P. C. WHITNEY; for the Physical Sciences, W. E. DEMING (chairman), W. G.